

EEE521 High Voltage Engineering(2 Units)

Department of Electrical and Information Engineering

Covenant University

1. EEE521

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Generation of High Voltages and Currents: Generation of high D.C. voltages. Voltage multipliers. Van-de-Graff generators. Generation of high a.c. voltages: cascaded transformers and Tesla coil. Impulse voltages and currents. Control of Impulse generators. Breakdown Phenomena: Breakdown in electronegative gases. Time lags for breakdown. Streamer theory of breakdown. Paschens law. Breakdown in non-uniform fields and corona discharges. Conduction and breakdown in liquids. Breakdown in solid dielectrics: intrinsic breakdown, thermal breakdown and electromechanical breakdown. High Voltage Measurement and Testing: Measurement of D.C. resistivity. Dielectric constant and loss factor. Partial discharge measurement. Testing of insulators and bushings. Testing of cables, circuit breakers, transformers and surge diverters. Radio interference measurements. Over voltage. Phenomenon and Insulating Coordination: Lightning and switching surges. Basic insulation level. Surge diverters and arresters. Principles of insulation coordination on high voltage and extra high voltage power systems.